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## ARCHAEOLOGICAL EVIDENCES OF MAN'S ANTIQUITY AT VERO, FLORIDA

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The apparent association of human remains and artifacts with fossil animal remains in Pleistocene deposits is always and everywhere sufficient to challenge the attention of scientists. This is especially true of the New World, where Pleistocene man has not yet won a place in the prehistoric hall of fame; hence the wide interest taken in the announcement by Dr. E. H. Sellards,<sup>1</sup> state geologist of Florida, that he and his colleagues had found such an association at Vero, Florida.

As one of several invited to investigate the circumstances of the find on the spot, the writer obtained leave of absence from Yale University for this purpose, and visited the Vero site during the week of October 23-29 as the guest of Dr. Sellards. To him and to his assistant, Mr. H. Gunter, as well as to his local associates, Messrs. Frank Ayers and Isaac M. Weills, grateful acknowledgments are due for facilities so generously extended. The writer's visit approximately coincided with those of Dr. Rollin T. Chamberlin of Chicago and Drs. O. P. Hay, A. Hrdlička, and T. Wayland Vaughan of Washington, D.C. The headquarters of the party were at the site itself, one-half mile north of the village of Vero, and easily reached by the highway that parallels the railroad tracks.

The drainage canal which cuts through the site is of itself sufficient proof of the flatness of the country. The human remains and artifacts and the fossil animal remains were all found at the junction of two lateral valleys, which united to form the trunk of a wider valley; in this valley until recently a stream followed an "ill-defined, anastomosing, and frequently changing channel." At

<sup>1</sup> *Amer. Jour. Sci.*, XLII (July, 1916); *Eighth Ann. Rep. Fla. State Geol. Survey*, pp. 121-60, 1916; *Science*, N.S., XLIV (October 27, 1916).

this junction the canal enters from the west the main-stream valley, which it follows for some 800 feet.

Along both banks of the canal Dr. Sellards had prepared sections for the inspection of the party. One of these sections was extended by Dr. Hrdlička, who also opened up a new section along the east bank of the tributary canal that follows the course of the lateral valley entering from the south. Additional animal remains were found daily during the stay of the party, especially in the middle one of the three strata described by Dr. Sellards. As to the correctness of his interpretation of the stratigraphic section there would seem to be little doubt. It remains to be seen whether all his conclusions can stand the test with equal success.

Dr. Sellards had brought with him from Tallahassee human remains found to date in stratum No. 2 and along the contact line between it and stratum No. 3, also certain flint chips, bone implements, the tip of a proboscidian tusk, and a fragment of a bird bone—the last two with markings which he believed to have been made by tools. These were all carefully studied by the writer while he was at Vero. Later the human bones were sent to Dr. Hrdlička at the National Museum and will be the subject of his contribution. From a study of them at Vero before the broken parts were assembled, and without material at hand for comparison, the writer agrees with Dr. Hrdlička that they are in no way different from Indian skeletal remains found in the sand mounds of Florida. In the writer's opinion the markings on the tip of the proboscidian tusk and on the fragment of bird bone, both from stratum No. 2, are not the work of man.

A consignment including flint chips and implements, bone implements, and an ornament and potsherds were sent to New Haven after the writer's return. The sherds and some of the other objects are from stratum No. 3. Some of these specimens were figured by Dr. Sellards; certain of the figures which seemed to be inadequate in Sellards' work are reproduced herewith.

The flint spall, No. 6964 (Sellards' Text-Fig. 11), was found in stratum No. 2, in the south bank, 460 feet west of the railroad bridge and 3 feet from certain bones of human skeleton No. II (Fig. 1). Another and smaller spall of identical material, which might well

have been chipped from the same parent block, was, according to Sellards, found in the south bank 460 feet west of the bridge, but in stratum No. 3 (Fig. 2). That of these two chips of like material and so near each other in respect to horizontal displacement one should have been found in stratum No. 3 and the other in stratum No. 2 is significant. The question arises whether both might not have been originally in stratum No. 3, one having worked its way down into No. 2 by the aid of growing roots or burrowing animals. While Dr. Sellards does not recall having seen any roots reaching into stratum No. 2 where the spall reproduced in Fig. 1 was found, he admits that roots do penetrate this stratum in places, notably a

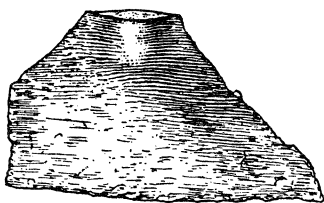


FIG. 1



FIG. 2



FIG. 3

FIGS. 1-3.—(1) Flint spall from stratum No. 2, south bank, 460 feet west of the bridge and near human bones; (2) flint spall of identical material from stratum No. 3, south bank, 460 feet west of the bridge, from siftings; (3) flint spall from stratum No. 2, south bank, 460 feet west of the bridge, from siftings (†). Nos. 6964, 7072, and 7049.

little farther west where flint No. 7055 (not herein figured) was found.

These spalls were never retouched or utilized. Each has what the French call a *plan de frappe* ("plane of percussion") and a well-marked bulb of percussion. The inner or conchoidal surface is fresh and the edges are unworn. They were evidently chipped from the parent block not far from where they were found. At one time the presence of a bulb of percussion was looked upon as a sure sign of human agency. Certain rare examples from the base of the Eocene at Belle-Assise, Clermont (Oise), and from the Oligocene at Boncelles, Belgium, are proof that the bulb is not an infallible sign. By accidentally letting one flint fall upon another, the writer has on one occasion unintentionally caused the production of a bulb of percussion. It is, however, quite logical to assume that the vast

majority of chips with bulbs that occur in Pleistocene and later deposits have been produced intentionally, especially when associated with human skeletal remains or with undoubted artifacts. This is doubly true at Vero, because the source of the flint is the Ocala or the Tampa formation a hundred miles to the northwest of Vero. The cores from which the chips were struck could not well have been transported that distance over so flat a country except through human agency.

The small flint chip reproduced in Fig. 3, and thought by Sellards (his Text-Figs. 7 and 8) to be an implement, is likewise only a chip or spall with its plane of percussion and bulb of percussion. The multiple facets on its back or outer surface are due to the fact that it was an inner instead of a superficial chip. It also is from the south bank 460 feet west of the bridge, hence from near skeleton No. II and the other two spalls here reproduced. While obtained from siftings, it is believed by Dr. Sellards to have come from stratum No. 2. In a recent letter he emphasizes the fact that "up to the present the number of spalls taken from stratum No. 2 is in excess of the number taken from stratum No. 3, notwithstanding that rather more material from No. 3 has been handled, and fully as much material from that stratum has been passed through the sieve as from stratum No. 2." This fact, however, would not seem to have any very direct bearing on the question whether or not flints from stratum No. 3 had worked their way down into stratum No. 2.

A typical arrowhead of flint with barbs and stem, the latter however broken off, came from the contact line between strata No. 2 and No. 3 in the south bank 470 feet west of the bridge (Sellards' Fig. 1, Pl. 21).

For the sake of comparison bone implements from strata No. 2 and No. 3 are reproduced in Figs. 4-6. Fig. 4 is a typical point from stratum No. 3, south bank, one of several from 450 to 470 feet west of the bridge. The fragment of a similar point, obtained in siftings from stratum No. 2, south bank, 462 feet west of the bridge, is shown in Fig. 5. Another and nearly complete point, obtained in siftings from stratum No. 2, south bank, 480 feet west of the bridge, differs from the other two only in size (Fig. 6).

So far as the writer is aware no potsherds have as yet been reported from stratum No. 2, although they occur somewhat plentifully in stratum No. 3. Of the dozen sherds sent to New Haven every one is more or less waterworn. When subjected to stream action, these sherds would show the effects of wear quicker than would the bones, flints, and bone implements. The pottery is of fairly uniform quality, the paste being neither crude nor fine. It is black to brown in color and the walls are of medium thickness. Judging from these twelve sherds, the ware was unpainted and undecorated. Of the three rim fragments, two are from bowls of



FIG. 4

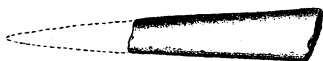


FIG. 5



FIG. 6

FIGS. 4-6.—(4) Bone point from stratum No. 3, south bank, 450-70 feet west of bridge; (5) fragment of bone point from siftings of stratum No. 2, south bank, 462 feet west of the bridge; (6) bone point from siftings of stratum No. 2, south bank, 480 feet west of the bridge (§). Nos. 6912, 6963, 6981.

medium size, the third, somewhat thicker, is from a medium-sized bowl with slightly incurved rim. All these rims are plain but carefully finished. The smoke stains and accumulated soot indicate that these were culinary vessels. It should be recalled that the sherds, flints, and bone implements of stratum No. 3 are found in the north as well as the south bank of the canal at the junction of the two lateral valleys previously mentioned. None of these differ from similar antiquities found on the surface or in Florida mounds.

To summarize the archaeological evidences of man's antiquity at Vero, one can say that the pottery, bone implements, including fishhooks, bone heads, and flint arrowheads from stratum No. 3 and from the surface of contact between it and the stratum below,

all point to a period that might well have continued down to the close of the préhistoric period in Florida. This is also true of the human skeletal remains from the third stratum. On the other hand, of the 25 mammalian species from the second stratum as listed by Dr. Sellards, ten, including *Elephas columbi*, *Mammot americanum*, *Equus leidyi*?, and *Tapirus haysii*?, recur in stratum No. 3. Assuming that the stratigraphy is not misleading, the conclusion is either that this particular phase of the Neolithic period in America dates back farther than many had supposed, or else that certain fossil mammals continued to live on in Florida until a comparatively recent date.

The chief interest centers in the second stratum. From it no undoubted stone implements have thus far been reported. Although probably produced through human agency, the flint spalls from this deposit do not differ from those in the deposit above, in one case there being absolute identity of material. While a greater number of bone objects have been found in the third deposit than in the second, bone points of the same type occur in both; neither do these seem to differ as to their chemical state. Potsherds, fairly frequent in stratum No. 3, have not yet been reported from the stratum below. Of the human skeletal remains there does not seem to be any appreciable differentiation between those from the second and those from the third stratum.

There are to be noted then the absence of well-defined stone artifacts and of pottery from the second deposit; the presence of both in the third; the similarity of the flint chips from the two deposits; the similarity of the bone points in both deposits; and the greater number and variety of bone artifacts including ornaments in the third deposit. But for the similarity of the flint chips and the bone points the cultural evidence is very much as one might have been led to expect, assuming of course that the stratigraphy is unmixed and that all specimens have been found *in situ*. On the other hand, in the absence of stratigraphy as a guide, of all the human and cultural remains reported from stratum No. 2 none would seem out of place in stratum No. 3.

It will be recalled that one flint spall (see Fig. 3) referred to the second stratum was from siftings; and that the two bone points

(see Figs. 5 and 6) referred to the same stratum are likewise from siftings. Even if these were eliminated, there would still remain as stratigraphically troublesome elements the two flint chips (see Figs. 1 and 2). The presence of plant stems, acorn cups, and pieces of wood in the second stratum, although by no means so abundant as in the third stratum, nevertheless give to it an aspect of comparative newness. Some of the leaves in the muck at the base of the third stratum look as if they might have been buried only a few years ago.

From observations made on the spot and from a study of specimens submitted, the writer is of the opinion that for the most part the human skeletal remains, flint chips, and artifacts probably found their way to this meeting-place of waters through the same agencies as did the various animal and plant remains, and that there has been more or less dovetailing of the two deposits, because of the peculiar location of the site at the junction of two streams coming from opposite directions. If these premises be true, it would be hazardous to attribute any great antiquity to even the oldest human and cultural remains from Vero. It would be more logical to assume that some of the extinct forms found in the second stratum are perhaps derived from an older deposit; that others lived on in that southern clime longer than has hitherto been supposed, and that the presence of the Indian hunter had much to do with the final ringing down of the curtain on the drama of their ultimate extinction.